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IN THE CLAIMS:

1. (Cancelled)

2. (Previously Presented) The plasma-processing method of comprising:

providing a grounded electrode located within a process chamber;

mounting a silicon-containing substrate on a mounting unit comprising an electrode located within the process chamber;

generating plasma by feeding plasma-generating gas comprising fluorine-containing gas into the process chamber and causing a plasma discharge by applying a high frequency voltage across a volume of gas within said chamber between said mounting unit and the grounded electrode; and

etching the silicon-containing substrate with the plasma while keeping the silicon-containing substrate at a temperature of at least 40°C.

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wherein the silicon-containing substrate is a silicon wafer having a first side having a protective tape affixed thereon and a second side opposite the first side,

wherein said mounting the silicon-containing substrate comprises mounting the silicon wafer on the mounting unit with the protective tape located between the wafer and the mounting unit, and

wherein said etching the silicon-containing substrate comprises etching the second side while the mounting unit is held at the temperature.

3. (Previously Presented) The method of claim 2, additionally comprising removing from the second side of the silicon wafer a stressed layer previously formed by polishing or grinding, and removing the stressed layer before etching the second side.

4. (Previously Presented) The method of claim 2, wherein the said temperature is below a heat resistance temperature of the protective tape.

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5. (Cancelled)

6. (Previously Added) The method of claim 2, wherein the fluorine-containing gas is selected from the group consisting of carbon tetrafluoride and sulfur hexafluoride.